



**US Army Corps
of Engineers®**
Rock Island District

THOMAS J. O'BRIEN (CHICAGO, ILLINOIS) CALUMET RIVER

Construction: 1957-1960
Congressional District: IL-2

DESCRIPTION

Thomas J. (T.J.) O'Brien Lock and Dam is 326.0 miles above the confluence of the Illinois River with the Mississippi river at Grafton, Illinois. It is approximately 35 miles upstream of the Lockport Lock and Dam, in the southeastern portion of Chicago.

O'Brien is located at the entrance to Lake Michigan in Chicago. The facility is a unit of the Inland Waterway Navigation System and is one of eight such facilities between Chicago and Versailles, Ill. It is composed of a navigational lock, fixed dam, and controlling works.

O'Brien is a low-lift sector gate lock. It provides a maximum lift of five feet for traffic passing from Lake Michigan to the Calumet River. The lock chamber is 1,000-feet long by 110-feet wide. The dam is 296.75 feet long. The controlling works consist of four large vertical slide gates (10 feet square) located near the center of the dam to regulate water flow. There are also two sets of sector gates weighing 216 tons each at both the river and lake ends. These are unique on the Illinois Waterway and; consequently, there is no need for tunnels in the lock walls.

T.J. O'Brien Lock and Dam controls the movement of water between Lake Michigan and the Calumet River while maintaining navigation. The lock and dam are used for flood control and waterway flushing, and also function as components of the diversion control system.

HISTORY/SIGNIFICANCE

The lock opened in 1960. The lock and dam elements of the complex were completed at a cost of \$6,954,700. In 2007, the complex would have cost \$66,400,000 to build.

ANNUAL TONNAGE (10-YEAR HISTORICAL)

<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>
1998	8,854,284	2003	6,975,080
1999	7,371,509	2004	9,674,528
2000	8,436,175	2005	9,048,078
2001	6,778,306	2006	9,482,367
2002	7,618,898	2007	7,294,890

(MORE INFORMATION ON THE REVERSE SIDE)

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COMMODITY TONNAGE & LOCKAGES (2007)

Coal	1,688,950	<u>Subtotals:</u>	
Petroleum	549,958		
Chemicals	227,174	Grain	349,500
Crude Materials	1,645,428	Steel	2,045,263
Manufactured Goods	2,654,183		
Farm Products	416,700	<u>Lockages:</u>	
Manufactured Machinery	74,487		
Waste Material	9,600	Boats:	20,964
Unknown	28,410	Cuts:	7,329

CURRENT MAINTENANCE ISSUES – THOMAS J. O'BRIEN

Item (Critical Rank Order)

Lock - Major Rehabilitation
Lock & Dam - Major Maintenance
Install New High Mast Lighting
Systemic Filling Valve Replacement
New Maintenance Building

TOTAL ESTIMATED COST: \$30,700,000

After 48 years of service, reliability, and operation, problems are a recurring threat and have significant impacts to the navigation users. A plan to reduce the width of the Chicago River in the City of Chicago, near the Chicago Lock, has already rerouted the barge traffic using the Chicago Lock to the O'Brien Lock.

Although this will not cause a significant change in traffic flow, it does mean that O'Brien will be the only commercial access from the Illinois Waterway to Lake Michigan.

Frequent flooding and temperature extremes, combined with high usage, has resulted in significant deterioration of lock concrete and the decline of mechanical and electrical systems performance and reliability. The vertical concrete has deteriorated to the point that sections have had to be removed and/or threaten to fall into the lock chamber. Barges can become wedged under the armor, resulting in a dangerous situation for deck hands, lock personnel, and potential damage to the barges. Hazardous working conditions exist due to deteriorated horizontal concrete on the land and river walls of the lock chamber. The mechanical and electrical systems require constant patching and labor intensive repairs. Parts are difficult to obtain and have to be specially made in most cases. The probability of failure of the mechanical and electrical systems requiring extensive and expensive repairs in the next several years is very high. The potential at any time for an incident to occur due to deteriorated lock concrete, in which the lock had to be closed for more than a week, is very probable with the potential increasing every year the lock concrete is not rehabilitated.

A Rehabilitation Evaluation Report was approved in 2004, and we are awaiting a new construction start.

Significant features of the work include rehabilitation of the sector gate electric system, the lock electrical distribution system, and injection grouting of the lock land & river walls. The existing lock mechanical and electrical systems are original equipment installed in the 1960s. The electric power utility service was upgraded in 1998, but the other components have been in operation since the original construction of the lock. An electrical component failure of the lock electrical distribution system or the sector gate electrical system could result in lock failure, which could cause delays to navigation traffic. The sheet piling for the lock land wall and river walls have also been in service since the original construction of the lock. Should one of the sheet pile cells rupture, the lock would have an unscheduled closure to navigation for a minimum of 60 days. The repair costs are estimated at \$530,000 and the transportation impacts associated with a 60-day closure would approach \$18.1 million dollars. New lock dewatering bulkheads are needed to replace the old set of bulkheads that has been decommissioned due to age and deterioration.

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7 March 2008



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LOCKPORT (LOCKPORT, ILLINOIS) CHICAGO SANITARY & SHIP CANAL

Construction: 1923-1933
Congressional District: IL-13

DESCRIPTION

Lockport Lock and Dam is 291.0 miles above the confluence of the Illinois River with the Mississippi river at Grafton, Illinois. The complex is two miles southwest of the city of Lockport, Illinois.

The lock is 110-feet wide by 600-feet long. Maximum vertical lift is 42.0 feet, the average lift is 39 feet. It averages 22.5 minutes to fill the lock chamber; 15 minutes to empty.

The Corps of Engineers controls the lock at Lockport. The Lockport Dam consists of the Metropolitan Sanitary District of Greater Chicago (MSDGC) lock, powerhouse and associated controlling works. The Corps has no ownership of the controlling works; however, it has the responsibility to maintain the foundation, piers, dolphins and all the concrete at the Lockport Controlling Works and the gravity structure at the dam.

Rehabilitation of the lock was completed in 1989 at a cost of \$22,681,000.

HISTORY/SIGNIFICANCE

The lock opened in 1933. Lockport Lock was one of five designed and partially constructed by the state of Illinois over a period from 1923 to 1930. The complex was about 97 percent complete when construction was turned over to the federal government due to state financial difficulties.

The government, by the authority of the Rivers and Harbors Act of 1930, completed construction of the lock in 1933. The opening of the Lockport Lock coincided with the opening of the downstream Brandon Road, Dresden Island, Marseilles, and Starved Rock locks and dams. The total cost of the lock was \$2,153,867, of which \$2,020,259 was state funded and \$133,608 was funded by the federal government.

ANNUAL TONNAGE (10-YEAR HISTORICAL)

<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>
1998	17,102,920	2003	15,310,005
1999	16,039,564	2004	17,341,066
2000	16,788,986	2005	16,929,707
2001	15,970,297	2006	17,253,650
2002	16,872,206	2007	13,507,517

(MORE INFORMATION ON THE REVERSE SIDE)

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COMMODITY TONNAGE & LOCKAGES (2007)

Coal	1,365,854	<u>Subtotals:</u>	
Petroleum	2,072,719		
Chemicals	1,753,871	Grain	335,453
Crude Materials	4,742,221	Steel	1,902,675
Manufactured Goods	2,910,242		
Farm Products	495,237	<u>Lockages:</u>	
Manufactured Machinery	113,747		
Waste Material	21,855	Boats:	3,832
Containers & Pallets	12,000	Cuts:	3,784
Unknown	19,771		

CURRENT MAINTENANCE ISSUES – LOCKPORT

Item (Critical Rank Order)

Approach Dike Repairs - Cutoff Wall - Major Rehabilitation
Channel Concrete Wall - Major Rehabilitation
Lock Emergency Gate Hydraulic System Rehabilitation
Systemic Miter Gate Replacement
Emergency Gate Hydraulic Butterfly Valves (4)
Bulkhead Design - Vertical Sluice Gate
Tree Removal along Embankment
Replace Lock Controlling Works
Systemic Filling Valve Replacement
Major Maintenance - Spillway Design & Construction
New Maintenance Building
Power House Guide Wall Rehabilitation

TOTAL ESTIMATED COST: \$137,300,000

The existing 9-foot Channel Navigation Project was largely constructed in the 1930's and extends down the Upper Mississippi River from Minneapolis-St. Paul to its confluence with the Ohio River and up the Illinois Waterway to the Thomas J. O'Brien Lock in Chicago. It includes 37 Locks and approximately 1,200 miles of navigable waterway in Illinois, Iowa, Minnesota, Missouri, and Wisconsin. The system's 600-foot locks do not accommodate today's modern tows without splitting and passing through the lock in two operations. This procedure requires uncoupling barges at midpoint which triples lockage times and exposes deckhands to increased accident rates.

More than 580 manufacturing facilities, terminals, and docks ship and receive tonnage in the Upper Mississippi River basin. In 2005, the system moved more than 160 million tons of commercial cargo worth roughly \$28.5 billion. Grains (corn and soybeans) dominate traffic on the system. Other commodities, mainly cement and concrete products, comprise the second largest group. A modern 15-barge tow transports the equivalent of 870 large semi-trucks (22,500 cargo tons, 787,500 bushels, or 6,804,000 gallons). Annually, the project generates an estimated \$1 billion of transportation cost savings compared with the operation and maintenance costs of approximately \$115 million.

In constant dollar terms, operations and maintenance funding for the system has been largely flat or declining for decades, while maintenance needs of the aging infrastructure increase. This is adversely affecting reliability of the system. Long-established programs for preventative maintenance of major lock components have essentially given way to a fix-as-fail strategy, with repairs sometimes requiring weeks or months to complete. Depending on the nature of a lock malfunction, extended repairs can have major consequences for shippers, manufacturers, consumers, and commodities investors.

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7 March 2008



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BRANDON ROAD (JOLIET, ILLINOIS) DES PLAINES RIVER

Construction: 1927 -1933
Congressional District: IL-11

DESCRIPTION

Brandon Road Lock and Dam is 286 miles above the confluence of the Illinois River with the Mississippi river at Grafton, Illinois. The complex is located 27 miles southwest of Chicago; 2 miles southwest of Joliet, Illinois, near Rockdale.

The dam is 2,391 feet long (exclusive of fixed embankment and river wall). It contains 21 operational Tainter gates (50-feet wide by 2-feet, 3-1/2-inches high), six sluice gates (7-feet, 9-inches wide x 8-feet, five-inches high, bulkheaded closed), and 16 pairs of 16-feet-high by 15-feet-wide headgates (8 operational, 8 bulkheaded closed). The lock is 600-feet long, 110-feet wide. Nominal lift is 34 feet with an average 19-minute lock chamber fill time; 15-minute emptying time.

From the upper limits of the city of Joliet to Brandon Road Lock and Dam, the Illinois Waterway is contained between concrete gravity walls which are from 15 to 40-feet high. The walls extend approximately three miles upstream from the lock and dam. Failure of these walls could result in flooding Joliet. Repair of the deteriorated walls and manholes was completed from 1985-1988. In 2007, the Corps began a multi-million dollar, multi-year program to repair and reinforce the walls to ensure their continued integrity.

HISTORY/SIGNIFICANCE

The lock opened in 1933. Brandon Road Lock and Dam was one of five designed and partially constructed by the state of Illinois over a period from 1927 to 1930. The complex was about 70 percent complete when construction was turned over to the federal government due to state financial difficulties.

The government, by the authority of the Rivers and Harbors Act of 1930, completed construction of the lock in 1933. The lock and dam elements of the complex were completed at a total cost of \$4,500,000, of which \$2,031,683 were state funds and \$2,434,748 were federal funds.

ANNUAL TONNAGE (10-YEAR HISTORICAL)

<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>
1998	17,260,536	2003	15,784,153
1999	16,073,774	2004	17,656,488
2000	16,939,884	2005	17,341,109
2001	16,418,031	2006	17,811,849
2002	17,177,894	2007	13,862,037

(MORE INFORMATION ON THE REVERSE SIDE)

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COMMODITY TONNAGE & LOCKAGES (2007)

Coal	1,331,834	<u>Subtotals:</u>	
Petroleum	2,070,160		
Chemicals	1,740,490	Grain	323,253
Crude Materials	4,960,766	Steel	1,925,353
Manufactured Goods	3,083,444		
Farm Products	481,661	<u>Lockages:</u>	
Manufactured Machinery	140,391		
Waste Material	21,420	Boats:	3,948
Containers & Pallets	13,600	Cuts:	3,933
Unknown	18,271		

CURRENT MAINTENANCE ISSUES — BRANDON ROAD

Item (Critical Rank Order)

Rehabilitation Evaluation Report
Tainter Gate Concrete Repairs
Systemic Miter Gate Replacement
Systemic Control Stand Replacement
Install New High Mast Lighting
Paint/Repair Service Bridge, Tainter Gate Section
Systemic Dam Machinery Replacement (Engineering & Design)
Systemic Filling Valve Replacement
Concrete Repairs Downstream I-Wall and Land Wall
Install Traveling Keel and Remove Pier
New Maintenance Building

TOTAL ESTIMATED COST: \$19,950,000

The existing 9-foot Channel Navigation Project was largely constructed in the 1930's and extends down the Upper Mississippi River from Minneapolis-St. Paul to its confluence with the Ohio River and up the Illinois Waterway to the Thomas J. O'Brien Lock in Chicago. It includes 37 Locks and approximately 1,200 miles of navigable waterway in Illinois, Iowa, Minnesota, Missouri, and Wisconsin. The system's 600-foot locks do not accommodate today's modern tows without splitting and passing through the lock in two operations. This procedure requires uncoupling barges at midpoint which triples lockage times and exposes deckhands to increased accident rates.

More than 580 manufacturing facilities, terminals, and docks ship and receive tonnage in the Upper Mississippi River basin. In 2005, the system moved more than 160 million tons of commercial cargo worth roughly \$28.5 billion. Grains (corn and soybeans) dominate traffic on the system. Other commodities, mainly cement and concrete products, comprise the second largest group. A modern 15-barge tow transports the equivalent of 870 large semi-trucks (22,500 cargo tons, 787,500 bushels, or 6,804,000 gallons). Annually, the project generates an estimated \$1 billion of transportation cost savings compared with the operation and maintenance costs of approximately \$115 million.

In constant dollar terms, operations and maintenance funding for the system has been largely flat or declining for decades, while maintenance needs of the aging infrastructure increase. This is adversely affecting reliability of the system. Long-established programs for preventative maintenance of major lock components have essentially given way to a fix-as-fail strategy, with repairs sometimes requiring weeks or months to complete. Depending on the nature of a lock malfunction, extended repairs can have major consequences for shippers, manufacturers, consumers, and commodities investors.

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DRESDEN ISLAND (MORRIS, ILLINOIS) ILLINOIS RIVER

Construction: 1928-1930
Congressional District: IL-11

DESCRIPTION

Dresden Island Lock and Dam is 271.5 miles above the confluence of the Illinois River with the Mississippi river at Grafton, Illinois. The complex is 1-1/2 miles downstream from the mouth of the Kankakee River and about 15 miles southwest of Joliet, Illinois.

The complex consists of a gated concrete gravity dam. The total length of the lock and dam between abutments is about 1,320 feet. Lock dimensions are 110-feet wide by 600-feet long with a maximum lift of 22 feet. Average filling time of the lock chamber is 14 minutes; 12 minutes emptying time.

The dam consists of an arch dam section, a fixed spillway section, nine Tainter gates (60-feet wide by 17-feet high), 18 plugged headgates, and a 500-foot long earthfill section with steel sheet pile cut-off wall connecting the headgate section to the Illinois and Michigan Canal embankment.

It takes 2 hours for water to travel from Brandon Road Lock and Dam to Dresden Island during flood or high flow conditions.

HISTORY/SIGNIFICANCE

The lock opened in 1933. Dresden Island Lock and Dam was one of five designed and partially constructed by the state of Illinois over a period from 1928 to 1930. Excavation and masonry work began in December 1928. The complex was about 35 percent complete when construction was turned over to the federal government due to state financial difficulties.

The government, by the authority of the Rivers and Harbors Act of 1930, completed construction in 1933. The estimated cost was \$2,306,000, however, the actual cost of the project was \$3,915,964, of which \$1,412,588 was funded by the state and \$2,503,376 was funded by the federal government.

ANNUAL TONNAGE (10-YEAR HISTORICAL)

<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>
1998	19,058,830	2003	18,556,711
1999	17,761,340	2004	20,389,783
2000	18,835,137	2005	19,371,418
2001	18,876,400	2006	20,548,035
2002	18,712,254	2007	16,532,747

(MORE INFORMATION ON THE REVERSE SIDE)

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COMMODITY TONNAGE & LOCKAGES (2007)

Coal	1,067,672	<u>Subtotals:</u>	
Petroleum	3,947,463		
Chemicals	2,783,734	Grain	333,757
Crude Materials	4,959,589	Steel	1,916,550
Manufactured Goods	3,076,877		
Farm Products	528,177	<u>Lockages:</u>	
Manufactured Machinery	115,836		
Waste Material	21,320	Boats:	4,211
Containers & Pallets	4,700	Cuts:	4,271
Unknown	27,379		

CURRENT MAINTENANCE ISSUES – DRESDEN ISLAND

Item (Critical Rank Order)

Rehabilitation Evaluation Report
Rehabilitate Lock - I-wall Electrical Gallery
Replace Dam Gates
Systemic Miter Gate Replacement
Rehabilitate Tainter Gate Piers 6 and 7 (Engineering & Design)
Systemic Control Stand Replacement
Install New High Mast Lighting
Systemic Dam Machinery Replacement (Engineering & Design)
Systemic Filling Valve Replacement
Construct Submergible Tainter Gate
Replace Standby Generator
Repair Upstream Guidewall and Mooring Cell
New Maintenance Building

TOTAL ESTIMATED COST: \$26,725,000

The existing 9-foot Channel Navigation Project was largely constructed in the 1930's and extends down the Upper Mississippi River from Minneapolis-St. Paul to its confluence with the Ohio River and up the Illinois Waterway to the Thomas J. O'Brien Lock in Chicago. It includes 37 Locks and approximately 1,200 miles of navigable waterway in Illinois, Iowa, Minnesota, Missouri, and Wisconsin. The system's 600-foot locks do not accommodate today's modern tows without splitting and passing through the lock in two operations. This procedure requires uncoupling barges at midpoint which triples lockage times and exposes deckhands to increased accident rates.

More than 580 manufacturing facilities, terminals, and docks ship and receive tonnage in the Upper Mississippi River basin. In 2005, the system moved more than 160 million tons of commercial cargo worth roughly \$28.5 billion. Grains (corn and soybeans) dominate traffic on the system. Other commodities, mainly cement and concrete products, comprise the second largest group. A modern 15-barge tow transports the equivalent of 870 large semi-trucks (22,500 cargo tons, 787,500 bushels, or 6,804,000 gallons). Annually, the project generates an estimated \$1 billion of transportation cost savings compared with the operation and maintenance costs of approximately \$115 million.

In constant dollar terms, operations and maintenance funding for the system has been largely flat or declining for decades, while maintenance needs of the aging infrastructure increase. This is adversely affecting reliability of the system. Long-established programs for preventative maintenance of major lock components have essentially given way to a fix-as-fail strategy, with repairs sometimes requiring weeks or months to complete. Depending on the nature of a lock malfunction, extended repairs can have major consequences for shippers, manufacturers, consumers, and commodities investors.

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7 March 2008



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MARSEILLES (MARSEILLES, ILLINOIS) ILLINOIS RIVER

General Contractors:

Lock: Green and Sons Company, Chicago, Illinois &
Independent Bridge Company, Pittsburgh, Pennsylvania
Marseilles Canal: Callahan Construction Company, St. Louis, Missouri

Construction: 1920-1933
Congressional District: IL-11

DESCRIPTION

Marseilles Lock is 244.6 miles above the confluence of the Illinois River with the Mississippi river at Grafton, Illinois, at the foot of Bells Island. Marseilles Dam is 2.5 miles upstream of the lock at the head of Bells Island.

The lock and dam is located southwest of Marseilles, Ill., near Illini State Park. The Marseilles Canal, adjacent to the left bank of the Illinois, extends from the dam to the lock. There are hydroelectric generating facilities at the dam.

The dam is a fixed, gated-concrete, gravity dam. The main dam is 598.5-feet long with eight submersible Tainter gates (60-feet wide, 16-feet high, 25-foot radius) and Ogee spillway at Ice Chute. The gates are remotely controlled by the lockmaster at the lock. The South Channel Headrace dam is 111-feet long with one Tainter gate. The North Channel Headrace dam is 206-feet long with two Tainter gates.

The lock is 110-feet wide by 600-feet long. The maximum lift is 24.5 feet with an average lift lower than 24 feet. It takes an average of 15 minutes to fill the lock chamber; 10 minutes to empty it. It takes 6 hours for water to travel from Dresden Island Lock and Dam to Marseilles during flood or high flow conditions.

HISTORY/SIGNIFICANCE

The Marseilles complex was one of five begun by the state of Illinois in 1920. The dam was about 95 percent complete when construction was turned over to the federal government due to state financial difficulties. The lock was completed, except for the steel work, in August 1923. The contract for the lock gates, valves and lower approach wall was let in 1927.

Marseilles Dam was completed in 1933 at a cost \$3,079,372, of which \$1,796,372 was funded by the state and \$1,283,000 was funded by the government.

ANNUAL TONNAGE (10-YEAR HISTORICAL)

<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>
1998	21,002,312	2003	19,619,082
1999	19,155,838	2004	21,754,394
2000	20,237,408	2005	20,139,348
2001	20,886,084	2006	21,043,379
2002	20,132,588	2007	17,221,068

(MORE INFORMATION ON THE REVERSE SIDE)

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COMMODITY TONNAGE & LOCKAGES (2007)

Coal	1,096,595	<u>Subtotals:</u>	
Petroleum	3,921,036		
Chemicals	3,125,418	Grain	1,108,239
Crude Materials	4,501,392	Steel	1,852,469
Manufactured Goods	3,010,016		
Farm Products	1,409,546	<u>Lockages:</u>	
Manufactured Machinery	123,469		
Waste Material	24,140	Boats:	4,402
Containers & Pallets	3,200	Cuts:	4,333
Unknown	6,256		

CURRENT MAINTENANCE ISSUES — MARSEILLES

Item (Critical Rank Order)

Causeway Concrete Repairs	Repair Electrical Cable Trenches
Systemic Miter Gate Replacement	Repair Concrete Upper Right Guidewall
Lock Concrete and Steel Repairs	Repair Bank Scour
Systemic Control Stand Replacement	Lower Guidewall Rehabilitation
Install New High Mast Lighting	Replace Standby Generator
Lock and Dam Slope Protection Channel	Lock Wall Concrete Repairs
Systemic Dam Machinery Replacement (Engineering & Design)	Remove Abandoned Lock Control House
Systemic Filling Valve Replacement	Sheet Piling Wall Construction
	New Maintenance Building

TOTAL ESTIMATED COST: \$27,000,000

The existing 9-foot Channel Navigation Project was largely constructed in the 1930's and extends down the Upper Mississippi River from Minneapolis-St. Paul to its confluence with the Ohio River and up the Illinois Waterway to the Thomas J. O'Brien Lock in Chicago. It includes 37 Locks and approximately 1,200 miles of navigable waterway in Illinois, Iowa, Minnesota, Missouri, and Wisconsin. The system's 600-foot locks do not accommodate today's modern tows without splitting and passing through the lock in two operations. This procedure requires uncoupling barges at midpoint which triples lockage times and exposes deckhands to increased accident rates.

More than 580 manufacturing facilities, terminals, and docks ship and receive tonnage in the Upper Mississippi River basin. In 2005, the system moved more than 160 million tons of commercial cargo worth roughly \$28.5 billion. Grains (corn and soybeans) dominate traffic on the system. Other commodities, mainly cement and concrete products, comprise the second largest group. A modern 15-barge tow transports the equivalent of 870 large semi-trucks (22,500 cargo tons, 787,500 bushels, or 6,804,000 gallons). Annually, the project generates an estimated \$1 billion of transportation cost savings compared with the operation and maintenance costs of approximately \$115 million.

In constant dollar terms, operations and maintenance funding for the system has been largely flat or declining for decades, while maintenance needs of the aging infrastructure increase. This is adversely affecting reliability of the system. Long-established programs for preventative maintenance of major lock components have essentially given way to a fix-as-fail strategy, with repairs sometimes requiring weeks or months to complete. Depending on the nature of a lock malfunction, extended repairs can have major consequences for shippers, manufacturers, consumers, and commodities investors.

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STARVED ROCK (OTTAWA, ILLINOIS) ILLINOIS RIVER

General Contractors:

Woods Brothers Construction Company, Lincoln, Nebraska &
Independent Bridge Company, Pittsburgh, Pennsylvania

Construction: 1926-1933

Congressional Districts: IL-11

DESCRIPTION

Starved Rock Lock and Dam is 231.0 miles above the confluence of the Illinois River with the Mississippi river at Grafton, Illinois. The lock and dam is located about 1.5 miles southeast of Utica, Ill.

The dam is a gated, concrete, gravity dam, 1,280-feet long. A 680-foot-long Tainter gate section contains 10 Tainter gates. The headgate section contains 30 headgates that were plugged with concrete in 1982. The 52-foot-long ice chute section of the dam includes a 52-foot-long inoperable Tainter gate. The lock is the standard 600-feet long by 110-feet wide. The maximum lift is 18.5 feet with an average lift of 17 feet. It takes approximately 12 minutes to fill the lock chamber; nine minutes to empty.

It takes 2 hours for water to travel from Marseilles Lock and Dam to Starved Rock during flood or high flow conditions.

HISTORY/SIGNIFICANCE

The lock opened in 1933. Starved Rock Lock and Dam was one of five designed and partially constructed by the state of Illinois over a period from 1926 to 1930. The original contractor, selected in 1923, failed to appear for the signing of the contract documents. Land litigation issues were resolved in 1925 and a second contract was awarded in 1926. Starved Rock Lock and Dam was about 95 percent complete when construction was turned over to the federal government due to state financial difficulties.

The government, by the authority of the Rivers and Harbors Act of 1930, completed construction of the lock in 1933. The lock and dam elements of the complex were completed at a total cost of \$4,462,737, of which \$3,577,419 were state funds and \$885,318 were federal funds.

ANNUAL TONNAGE (10-YEAR HISTORICAL)

<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>
1998	22,995,604	2003	21,837,185
1999	21,384,458	2004	23,796,648
2000	22,377,658	2005	22,070,208
2001	23,300,035	2006	23,187,461
2002	22,432,189	2007	19,052,616

(MORE INFORMATION ON THE REVERSE SIDE)

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COMMODITY TONNAGE & LOCKAGES (2007)

Coal	1,124,702
Petroleum	3,947,179
Chemicals	3,267,401
Crude Materials	4,767,852
Manufactured Goods	2,993,107
Farm Products	2,775,784
Manufactured Machinery	129,544
Waste Material	27,940
Containers & Pallets	3,200
Unknown	15,907

Subtotals:

Grain	2,411,299
Steel	1,831,923

Lockages:

Boats:	4,691
Cuts:	4,496

CURRENT MAINTENANCE ISSUES – STARVED ROCK

Item (Critical Rank Order)

Lock - Concrete Repairs
Rehabilitation Evaluation Report
Remove Mooring Cell
Systemic Miter Gate Replacement
Steam Line and Boiler Replacement
Install New High Mast Lighting
Replace Tainter Gates
Floating Mooring Bit Concrete Repairs
Repair Lower Riverwall Bullnose

Systemic Dam Machinery Replacement (Engineering and Design)
Systemic Filling Valve Replacement
Submersible Tainter Gate Construction
Repair Upstream Guidewall
Replace Standby Generator
Lower Guidewall Concrete Repairs
New Maintenance Building

TOTAL ESTIMATED COST: \$30,200,000

The existing 9-foot Channel Navigation Project was largely constructed in the 1930's and extends down the Upper Mississippi River from Minneapolis-St. Paul to its confluence with the Ohio River and up the Illinois Waterway to the Thomas J. O'Brien Lock in Chicago. It includes 37 Locks and approximately 1,200 miles of navigable waterway in Illinois, Iowa, Minnesota, Missouri, and Wisconsin. The system's 600-foot locks do not accommodate today's modern tows without splitting and passing through the lock in two operations. This procedure requires uncoupling barges at midpoint which triples lockage times and exposes deckhands to increased accident rates.

More than 580 manufacturing facilities, terminals, and docks ship and receive tonnage in the Upper Mississippi River basin. In 2005, the system moved more than 160 million tons of commercial cargo worth roughly \$28.5 billion. Grains (corn and soybeans) dominate traffic on the system. Other commodities, mainly cement and concrete products, comprise the second largest group. A modern 15-barge tow transports the equivalent of 870 large semi-trucks (22,500 cargo tons, 787,500 bushels, or 6,804,000 gallons). Annually, the project generates an estimated \$1 billion of transportation cost savings compared with the operation and maintenance costs of approximately \$115 million.

In constant dollar terms, operations and maintenance funding for the system has been largely flat or declining for decades, while maintenance needs of the aging infrastructure increase. This is adversely affecting reliability of the system. Long-established programs for preventative maintenance of major lock components have essentially given way to a fix-as-fail strategy, with repairs sometimes requiring weeks or months to complete. Depending on the nature of a lock malfunction, extended repairs can have major consequences for shippers, manufacturers, consumers, and commodities investors.

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7 March 2008



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PEORIA (CREVE COEUR, ILLINOIS) ILLINOIS RIVER

Construction: -1939
Congressional Districts: IL-18

DESCRIPTION

Peoria Lock and Dam is 157.7 miles above the confluence of the Illinois River with the Mississippi river at Grafton, Illinois. The lock and dam is located four miles downstream of Peoria, Ill.

The dam is a Chanoine wicket dam, the navigable pass type. Overall length of the dam is 570 feet. The movable dam is 432-feet long containing 108 wickets (3.75-feet wide, 16.42-feet high, 0.25-foot gap between wickets). The dam includes a single 84-foot-long submersible Tainter gate. The lock is the standard 600-feet long by 110-feet wide. The maximum lift is 11 feet with an average lift of six feet. It takes ten minutes to fill or empty the lock chamber.

From 1987-1990, a major rehabilitation changed the physical components of the dam and operating procedures by replacing 26 of the original 134 wickets with a single 84-foot long submersible Tainter gate adjacent to the lock wall.

It takes two days for water to travel from Starved Rock Lock and Dam to Peoria.

HISTORY/SIGNIFICANCE

The lock opened in 1939. Following the Supreme Court's decree of April 21, 1930, limiting the diversion of water from Lake Michigan, a new navigation plan was developed calling for removing four old locks and dams at Henry, Copperas Creek, LaGrange and Kampsville; new locks at Peoria and LaGrange, and a dam on the Mississippi River at Alton, Missouri, to provide the required navigation depth from the mouth of the Illinois to LaGrange. The lock is used only during low and moderate river flows when the wicket dams are raised to maintain the nine-foot navigation depth. During high flows, the wickets are lowered and open river conditions prevail.

Peoria is one of only two wicket dams on the Illinois Waterway. The lock and dam elements of the complex were completed at a cost of \$3,381,030.

ANNUAL TONNAGE (10-YEAR HISTORICAL)

<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>
1998	32,604,311	2003	31,878,067
1999	31,143,398	2004	32,321,149
2000	31,730,582	2005	29,734,319
2001	33,668,096	2006	30,514,817
2002	32,080,328	2007	26,391,793

(MORE INFORMATION ON THE REVERSE SIDE)

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COMMODITY TONNAGE & LOCKAGES (2007)

Coal	2,590,988	<u>Subtotals:</u>	
Petroleum	3,917,520		
Chemicals	4,542,051	Grain	7,087,329
Crude Materials	3,861,051	Steel	1,683,990
Manufactured Goods	2,855,420		
Farm Products	8,465,991	<u>Lockages:</u>	
Manufactured Machinery	119,440		
Containers & Pallets	2,700	Boats:	4,294
Unknown	36,632	Cuts:	4,613

CURRENT MAINTENANCE ISSUES – PEORIA

Item (Critical Rank Order)

Cut Bulkhead Slots
Systemic Miter Gate Replacement
Repair Horizontal Concrete & Riprap above Weir
Permanently Close Butterfly Valves
Add Guide Cells
Motor Vessel Sangamon Replacement
Emergency Stackable Miter Gates
Paint Tainter Gate, Service Bridge and Machinery
Systemic Filling Valve Replacement
Bituminous Restoration
New Maintenance Building

TOTAL ESTIMATED COST: \$22,900,000

The Water Resources Development Act of 2007 (WRDA 07) Title VIII authorized the dual-purpose navigation and ecosystem restoration plan for the Upper Mississippi River and Illinois Waterway. The new 1,200-foot lock, which is located landside, will cost approximately \$262,000,000. The design and construction of the new lock is dependent upon annual appropriations.

The existing 9-foot Channel Navigation Project was largely constructed in the 1930's and extends down the Upper Mississippi River from Minneapolis-St. Paul to its confluence with the Ohio River and up the Illinois Waterway to the Thomas J. O'Brien Lock in Chicago. It includes 37 Locks and approximately 1,200 miles of navigable waterway in Illinois, Iowa, Minnesota, Missouri, and Wisconsin. The system's 600-foot locks do not accommodate today's modern tows without splitting and passing through the lock in two operations. This procedure requires uncoupling barges at midpoint which triples lockage times and exposes deckhands to increased accident rates.

More than 580 manufacturing facilities, terminals, and docks ship and receive tonnage in the Upper Mississippi River basin. In 2005, the system moved more than 160 million tons of commercial cargo worth roughly \$28.5 billion. Grains (corn and soybeans) dominate traffic on the system. Other commodities, mainly cement and concrete products, comprise the second largest group. A modern 15-barge tow transports the equivalent of 870 large semi-trucks (22,500 cargo tons, 787,500 bushels, or 6,804,000 gallons). Annually, the project generates an estimated \$1 billion of transportation cost savings compared with the operation and maintenance costs of approximately \$115 million.

In constant dollar terms, operations and maintenance funding for the system has been largely flat or declining for decades, while maintenance needs of the aging infrastructure increase. This is adversely affecting reliability of the system. Long-established programs for preventative maintenance of major lock components have essentially given way to a fix-as-fail strategy, with repairs sometimes requiring weeks or months to complete. Depending on the nature of a lock malfunction, extended repairs can have major consequences for shippers, manufacturers, consumers, and commodities investors.

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7 March 2008



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LAGRANGE (VERSAILLES, ILLINOIS) ILLINOIS RIVER

Construction: 1936-1939
Congressional Districts: IL-18

DESCRIPTION

LaGrange Lock and Dam is 80.2 miles above the confluence of the Illinois River with the Mississippi river at Grafton, Illinois, 7.8 miles below Beardstown, Illinois.

LaGrange Lock and Dam consists of a 1,066-foot-long dam and a 110-foot-wide by 600-foot-long lock. The maximum lift is 10 feet with an average lift of 4.5 feet. It takes approximately 10 minutes to fill or empty the lock chamber.

LaGrange uses a Chanoine wicket dam, the navigable pass type. The wicket section is 436-feet long containing 109 wickets. Each wicket is 3.75-feet wide by 14.92-feet high, with a .25-foot gap between wickets. From 1987-1991, a major rehabilitation changed the physical components of the dam and operating procedures by replacing 26 of the original 135 wickets with a single 84-foot long submersible Tainter gate adjacent to the lock wall.

It takes 24-36 hours for water to travel from Peoria Lock and Dam to LaGrange during flood or high flow conditions.

HISTORY/SIGNIFICANCE

The lock opened in 1939. Following the Supreme Court's decree of April 21, 1930, limiting the diversion of water from Lake Michigan, a new navigation plan was developed calling for removing four old locks and dams at Henry, Copperas Creek, LaGrange and Kampsville; new locks at LaGrange and Peoria, and a dam on the Mississippi River at Alton, Missouri, to provide the required navigation depth from the mouth of the Illinois to LaGrange. The lock is used only during low and moderate river flows when the wicket dams are raised to maintain the nine-foot navigation depth. During high flows, the wickets are lowered and open river conditions prevail.

LaGrange is one of only two wicket dams on the Illinois Waterway. The lock and dam elements of the complex were completed at a cost of \$2,744,592.

ANNUAL TONNAGE (10-YEAR HISTORICAL)

<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>
1998	36,097,504	2003	35,13,6029
1999	35,59,7851	2004	34,681,667
2000	35,164,245	2005	31,708,944
2001	36,729,826	2006	32,903,584
2002	35,858,094	2007	29,046,034

(MORE INFORMATION ON THE REVERSE SIDE)

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COMMODITY TONNAGE & LOCKAGES (2007)

Coal	1,311,995	<u>Subtotals:</u>	
Petroleum	3,923,465		
Chemicals	4,872,545	Grain	9,825,333
Crude Materials	3,933,903	Steel	1,798,634
Manufactured Goods	3,000,567		
Farm Products	11,838,092	<u>Lockages:</u>	
Manufactured Machinery	109,305		
Waste Material	1,500	Boats:	3,202
Containers & Pallets	1,200	Cuts:	3,995
Unknown	53,462		

CURRENT MAINTENANCE ISSUES – LAGRANGE

Item (Critical Rank Order)

Lock - Major Rehabilitation
Lock - Major Maintenance
Cut Bulkhead Slots
Repair Missing Armor Plates on Lock Walls
Systemic Miter Gate Replacement
Permanently Close Butterfly Valves
Add Guide Cells
Paint Dam Tainter Gate, Service Bridge, and Machinery
Motor Vessel Beardstown Replacement
Emergency Stackable Miter Gates
Systemic Filling Valve Replacement
Office and Maintenance Building

TOTAL ESTIMATED COST: \$78,800,000

The Water Resources Development Act of 2007 (WRDA 07) Title VIII authorized the dual-purpose navigation and ecosystem restoration plan for the Upper Mississippi River and Illinois Waterway. The new 1,200-foot lock, which is located landside, will cost approximately \$261,000,000. The design and construction of the new lock is dependent upon annual appropriations.

For more than 65 years, the lock has been exposed to multiple freeze/thaw cycles and flooding, causing a gradual but incessant degradation of the lock components. Frequent flooding and temperature extremes, combined with high usage, has resulted in significant deterioration of lock concrete and the decline of mechanical and electrical systems performance and reliability. The vertical concrete has deteriorated to the point that sections have had to be removed and/or threaten to fall into the lock chamber. Barges can become wedged under the armor, resulting in a dangerous situation for deck hands, lock personnel, and potential damage to the barges. Hazardous working conditions exist due to deteriorated horizontal concrete on the land and river walls of the lock chamber. The mechanical and electrical systems require constant patching and labor intensive repairs. Parts are difficult to obtain and have to be specially made in most cases. The probability of failure of the mechanical and electrical systems, requiring extensive and expensive repairs, in the next several years is very high. The potential at any time for an incident to occur due to deteriorated lock concrete, in which the lock had to be closed for more than a week, is very probable with the potential increasing every year the lock concrete is not repaired. In 2004, an expert panel concluded that the lock concrete was in need of rehabilitation at the earliest possible opportunity.

Bulkhead slots are needed on the downstream end of the lock to allow for lock dewatering with bulkhead sections. As there are currently no bulkhead sections available on the Illinois Waterway, a set would need to be purchased under this project for lock dewatering during the rehabilitation. A Rehabilitation Evaluation Report was approved in 2005 with an estimated total cost of \$50.3 million. A preliminary schedule of work was developed with construction spanning over a three year period. Three lock closures will be required of approximately 30 days each with two of the three closures involving lock dewatering.

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